

WHAT IS CLAIMED IS:

- 1 1. A cleaning method of removing contamination from a
2 connecting-end-face of an optical connector, comprising the
3 step of:
4 pressing the tip of a cleaning stick made of a material
5 softer than the material of said optical connector's end-face
6 against said optical connector's end-face with a predetermined,
7 constant force; and
8 using a mechanism for rotating said cleaning stick about
9 a center axis along said cleaning stick to remove the
10 contamination from said optical connector's end-face, said
11 center axis deviating from the center of said optical
12 connector's end-face.
- 1 2. The optical connector's connecting-end-face cleaning
2 method according to claim 1, wherein said cleaning stick starts
3 rotating before said cleaning stick is pressed against said
4 optical connector's connecting-end-face.
- 1 3. The optical connector's connecting-end-face cleaning
2 method according to claim 1, wherein a cross-section of said
3 cleaning stick perpendicular to an axis of said cleaning stick
4 is rectangular in shape.

1 4. The optical connector's connecting-end-face cleaning
2 method according to claim 3, wherein a shape of said cleaning
3 stick along its axis is a helix.

1 5. The optical connector's connecting-end-face cleaning
2 method according to claim 3, wherein said cleaning stick has
3 a groove on its surface along its axis.

1 6. The optical connector's connecting-end-face cleaning
2 method according to claim 3, wherein a direction of a rotation
3 of said cleaning stick is determined so as to produce a current
4 of air flowing away from the tip along the helix is produced
5 when said cleaning stick rotates.

1 7. An optical connector's connecting-end-face cleaning
2 mechanism that brings a tip of a cleaning stick for cleaning
3 the optical connector's connecting-end-face into contact with
4 said end-face to clean said optical connector's
5 connecting-end-face, comprising:

6 an attachment into which a tip of said cleaning mechanism
7 containing said cleaning stick and said optical connector are
8 fitted coaxially from opposing directions; and

9 means for rotating said cleaning stick about a center
10 axis along said cleaning stick and pressing the tip of said
11 cleaning stick against said optical connector's
12 connecting-end-face.

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1 8. The optical connector's connecting-end-face cleaning
2 mechanism according to claim 7,

3 wherein a depth at which said tip is fitted into said
4 attachment is predetermined and said means for rotating said
5 cleaning stick and pressing said cleaning stick against said
6 optical connector's connecting-end-face comprises means for
7 exposing the tip of said cleaning stick from the tip of said
8 cleaning mechanism when said tip of said cleaning mechanism
9 is further pressed toward said optical connector from said
10 predetermined depth.

1 9. The optical connector's connecting-end-face cleaning
2 mechanism according to claim 7, wherein the rotation of said
3 cleaning stick is an eccentric rotation.

1 10. The optical connector's connecting-end-face cleaning
2 mechanism according to claim 7, wherein the force pressing
3 the tip of said cleaning stick against said optical connector's
4 connecting-end-face is a predetermined, constant force.

1 11. The optical connector's connecting-end-face cleaning
2 mechanism according to claim 7, wherein said cleaning stick
3 starts rotating before said cleaning stick is pressed against
4 said optical connector's connecting-end-face.

1 12. The optical connector's connecting-end-face cleaning
2 mechanism according to claim 7, wherein a material of said

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3 cleaning stick is softer than a material of said optical
4 connector's connecting-end-face.

1 13. The optical connector's connecting-end-face cleaning
2 mechanism according to claim 7, wherein a cross-section of
3 said cleaning stick perpendicular to the axis of said cleaning
4 stick is rectangular in shape.

1 14. The optical connector's connecting-end-face cleaning
2 mechanism according to claim 13, wherein a shape of said
3 cleaning stick along its axis is a helix.

1 15. The optical connector's connecting-end-face cleaning
2 mechanism according to claim 13, wherein said cleaning stick
3 has a groove on its surface along its axis.

1 16. The optical connector's connecting-end-face cleaning
2 mechanism according to claim 14, wherein the direction of the
3 rotation of said cleaning stick is determined so as to produce
4 a current of air flowing away from the tip along the helix
5 is produced when said cleaning stick rotates.

1 17. An optical connector's connecting-end-face cleaning
2 mechanism that brings the tip of a cleaning stick into contact
3 with an optical connector's connecting-end-face to clean the
4 optical connector's connecting-end-face,

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5 wherein said optical connector's connecting-end-face
6 cleaning mechanism comprises an attachment and a cleaning
7 mechanism main body, and

8 the tip of said cleaning mechanism contains said cleaning
9 stick passing through it and said optical connector are
10 coaxially fitted into said attachment from opposing directions
11 at their respective predetermined depths;

12 said cleaning mechanism main body comprises said tip and
13 a holder;

14 said holder is coupled with said tip through a first coil
15 spring to fit said tip against the inner wall of said holder
16 and slidably hold said tip, and

17 said holder comprises a motor;

18 a power supply for driving said motor;

19 a mechanism for transmitting the rotation of said motor
20 to said cleaning stick through a second coil spring;

21 and a third coil spring located in the cylinder hollow
22 of said first coil spring for performing switching operation
23 for connecting and disconnecting said motor to and from said
24 power supply by electrical connection and disconnection with
25 and from the first coil spring.

1 18. The optical connector's connecting-end-face cleaning
2 mechanism according to claim 17,

3 wherein when said holder is pushed toward said optical
4 connector after the tip of said cleaning mechanism main body
5 is fitted into said attachment at a predetermined depth, said
6 cleaning stick rotates about a center axis along said cleaning

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7 stick, the tip of said cleaning stick contained in said tip
8 of said cleaning mechanism main body is exposed from said tip
9 of said cleaning mechanism, and the tip of said cleaning stick
10 is pressed against said optical connector's
11 connecting-end-face with a predetermined, constant force.

1 19. The optical connector's connecting-end-face cleaning
2 mechanism according to claim 18,

3 wherein said cleaning stick starts rotating when said
4 holder is pushed toward said optical connector to retract said
5 first coil spring and electrically connect said first coil
6 spring to said third coil spring, and stops rotating when said
7 holder is pulled back from said optical connector to stretch
8 said first coil spring to disconnect said first coil spring
9 from the third coil spring.

1 20. The optical connector's connecting-end-face cleaning
2 mechanism according to claim 18,

3 wherein said tip of said cleaning mechanism further
4 comprises a stopper for inhibiting said holder from moving
5 beyond a predetermined distance toward said optical connector,
6 and

7 the tip of said cleaning stick is exposed from the tip
8 of said cleaning mechanism when said holder is pushed toward
9 said optical connector to retract said first coil spring and
10 a mechanism for transmitting the rotation of said motor to
11 said cleaning stick through said second coil spring pushes

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12 out said cleaning stick through the hollow of the tip of said
13 cleaning mechanism.

1 21. The optical connector's connecting-end-face cleaning
2 mechanism according to claim 18,

3 wherein said tip of said cleaning mechanism further
4 comprises a stopper for inhibiting said holder from moving
5 beyond a predetermined distance toward said optical connector;

6 the tip of said cleaning stick is pressed against said
7 optical connector's connecting-end-face when said holder is
8 stopped by said stopper; and

9 said predetermined, constant force is set by the position
10 of said stopper and the spring constant of said second coil
11 spring.

1 22. The optical connector's connecting-end-face cleaning
2 mechanism according to claim 17,

3 wherein said cleaning stick starts rotating before said
4 cleaning stick is pressed against said optical connector's
5 connecting-end-face.

1 23. The optical connector's connecting-end-face cleaning
2 mechanism according to claim 17,

3 wherein the rotation of said cleaning stick is eccentric
4 rotation.

1 24. The optical connector's connecting-end-face cleaning
2 mechanism according to claim 17,

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3 wherein the cross-section of said cleaning stick
4 perpendicular to the axis of said cleaning stick is rectangular
5 in shape.

1 25. The optical connector's connecting-end-face cleaning
2 mechanism according to claim 24,

3 wherein the shape of said cleaning stick along its axis
4 is a helix.

1 26. The optical connector's connecting-end-face cleaning
2 mechanism according to claim 24,

3 wherein said cleaning stick has a groove on its surface
4 along its axis.

1 27. The optical connector's connecting-end-face cleaning
2 mechanism according to claim 25,

3 wherein the direction of the rotation of said cleaning
4 stick is determined so as to produce a current of air flowing
5 away from the tip along the helix is produced when said cleaning
6 stick rotates.

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